

SOLVING TRIGONOMETRIC EQUATIONS

SOLVE FOR θ : $2\sin\theta + 1 = 0$

SOLVE FOR θ : $2\sin(2\theta) = \sqrt{3}$

SOLVE FOR θ : $3\sin(2\theta) = \sqrt{5}$

HINT: $\arcsin\left(\frac{\sqrt{5}}{3}\right) \approx 0.84$

$$\text{SOLVE FOR } \theta: \sin^2 \theta + 3 \sin \theta = -2$$

SOLVE FOR θ : $3 \cos \theta - \sin^2 \theta = -3$

SOLVE FOR θ : $\sin(2\theta) + 2\cos^2\theta = 0$

SOLVE FOR θ : $\cos^2 \theta + \sin \theta = 3$

SOLVE FOR θ : $\sin^2(2\theta)\cos^2(2\theta) = 1/4$

SOLVE FOR θ : $\cos^2(3\theta) - \sin^2(3\theta) = 0$

SOLVE FOR θ : $\sin\theta - \cos\theta = 1/\sqrt{2}$

A) BY USING SUM AND DIFFERENCE IDENTITIES

B) BY SQUARING BOTH SIDES

SOLVE FOR θ : $\sqrt{3}\sin\theta + \cos\theta = 1$

SOLVE FOR θ : $a \sin \theta + b \cos \theta = c$
WHERE $a, b,$ AND c ARE POSITIVE CONSTANTS.

GENERAL STRATEGY

$$x^2 + 3x = -2$$

$$\Rightarrow x^2 + 3x + 2 = 0$$

SET THE SUM = 0

$$\Rightarrow (x+2)(x+1) = 0$$

CHANGE THE SUM TO
A PRODUCT.

$$\Rightarrow \begin{cases} x+2 = 0 \\ x+1 = 0 \end{cases}$$

REPLACE A "BIG" EQUATION
WITH SEVERAL "SMALLER"
EQUATIONS.

$$\Rightarrow x = -1, -2$$

SOLVE.

WATCH FOR ADDING EXTRANEOUS SOLUTIONS OR
LOSING SOLUTIONS.

LOOK FOR ALTERNATE WAYS TO SOLVE THE SAME PROBLEM.

WRITE SOLUTIONS AS CONCISELY AS POSSIBLE
